Strengthening the Pipeline of Master's-level Scientific and Laboratory Personnel in Stem Cell Research

Grant Award Details

Strengthening the Pipeline of Master's-level Scientific and Laboratory Personnel in Stem Cell Research

Grant Type: Bridges

Grant Number: EDUC2-12691

Project Objective: This program provides stem cell training for up to 10 students per year (master's level) for 5 years at California State University, Sacramento. Training includes coursework, outreach activities, and an 8 month internship. Students are recruited from CSU Sacramento as well as other CSUs and community colleges.

Investigator:

Name:	Kimberly Mulligan
Institution:	Cal State Univ, Sacramento
Type:	PI

Award Value: $2,946,500

Status: Active

Grant Application Details

Application Title: Strengthening the Pipeline of Master's-level Scientific and Laboratory Personnel in Stem Cell Research

Public Abstract:

The applicant institution will partner with a CIRM Major Facility to create a comprehensive program that will produce 50 master's degree graduates with the scientific foundation, research experience, and laboratory skills to pursue careers in stem cell research. Graduates of the Stem Cell Master's Program will develop knowledge and skills required for basic research, as well as its translation into clinical applications. Rather than a traditional, independent master's thesis project, students will engage in activities specifically intended to improve their professional preparation for laboratory careers in applied biosciences. This will enable our graduates to help fill the high demand for research-support professionals in a growing number of laboratories devoted to stem cell research and translation to the clinic.

This program builds upon curricular strengths at the applicant institution and the outstanding research facilities of the CIRM Major Facility located nearby. The twenty-month program consists of graduate courses taken at Sacramento State and a research internship at UC Davis. During the eight-month research internship, students work with mentors as part of disease teams that bring students and research scientists together with clinicians to work toward cellular therapy trials. Students will also receive advanced training during a week-long Stem Cell Culture Techniques Course at the CIRM Major Facility. Education enhancement and professional development activities will include a course in Good Manufacturing Practice (GMP) at the CIRM Major Facility, and the Bench-to-Bedside Seminar Series at the applicant institution featuring speakers from renowned laboratories, patient advocacy groups and community healthcare facilities.

The program will emphasize community engagement through various mechanisms, including the dissemination of a student-authored stem cell blog featuring Bridges student research of CIRM Bridges students, as well as the Regenerative Medicine Lecture Series—a community lecture featuring prominent stem cell scientists— hosted by the applicant institution twice per calendar year.

The applicant institution has considerable potential to attract students from underserved populations. The program will be advertised to students throughout California, with an emphasis on minority-serving institutions and programs, like the Louis Stokes Alliance for Minority Participation Program and the Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS).

With a combination of research and professional skills, graduates will fill roles vital to furthering the progress of regenerative medicine. Graduates experienced in team-based research and GMP will have high potential for career advancement, transitioning easily beyond entry-level positions or into doctoral programs. Our program aims to both broaden participation in regenerative medicine and to enhance the development of novel stem cell-based therapies.

Statement of Benefit to California:	CIRM's funding and training institutions play a critical role in accelerating the rate at which qualified members join the field of stem cell research which, in turn, accelerates the rate at which human stem cell treatments and cures begin mending the current untreatable diseases that plague the population of California and the world beyond. Over the last 11 years, the CIRM Bridges students interning at laboratories within the Stem Cell Master's Program have significantly contributed to the development of stem cell science currently being translated into clinical applications for devastating disorders such as Huntington's disease, critical limb ischemia, non-healing diabetic ulcers, liver disease, kidney and bladder disease, HIV and epidermolysis bullosa. With this established track record, it is anticipated that the new Bridges students will have their own major impact in our stem cell laboratories, furthering the clinical translation of current stem cell applications. In addition to their technical training, students will become well-versed in new approaches to patient care, including how to effectively and compassionately communicate with patients about relevant stem cell therapies. With their specialized and focused education, it is expected that CIRM Bridges students will become leaders in biomedical fields and industry as stem cell applications become commercialized therapies that routinely benefit patients in the exciting field of regenerative medicine in healthcare. Of previous CIRM Bridges students who have graduated from the Master's Program, the vast majority are currently working within the biomedical sector or are in PhD programs in California, indicating a long-term benefit to the regional STEM workforce. With our increased recruitment efforts centered on students from historically underrepresented groups and the addition of equity-centered inclusive training practices, our program also aims to increase the diversity of California's biomedical workforce.